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## UAV automated aerial refueling one step closer to reality

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**WRIGHT-PATTERSON AIR FORCE BASE, Ohio** — The Air Force Research Laboratory's Air Vehicles Directorate engineers have successfully completed a flight demonstration that will help them evaluate the feasibility of using precision global positioning system (PGPS) and electro-optical technology for Unmanned Air Vehicle (UAV) automated aerial refueling (AAR) applications.

During approximately 14.5 hours of flight tests, a Lear Jet 25 from General Dynamics Advanced Information served as a surrogate UAV for simulated aerial refueling from a KC-135 Stratotanker from the 107th Air Refueling Wing, New York Air National Guard.

VA scientists successfully collected quality data from both the PGPS and the electro-optical sensor. They are using these test results to determine safe refueling speeds, possible tanker interference with PGPS reception, and the effectiveness of using electro-optical sensors for precise UAV positioning during AAR. In addition, they will use the data to create a flight control algorithm that will autonomously fly the surrogate UAV in the future.

AAR is a challenging task, balancing performance with reliability and safety. For it to be possible, the PGPS or electro-optical sensors must provide the aircraft position control within inches of accuracy. UAVs capable of refueling in the air will have the



*A Lear Jet 25 simulates a UAV refueling*

persistence to stay on station for extended periods of time and the ability to join the fight from bases thousands of miles away.

The Naval Air Systems Command, Air Force Flight Test Center, Tinker Air Force Base, General Dynamics, Rockwell-Collins, Boeing, and Northrop Grumman all made valuable contributions to this VA-led effort. @